

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Cancelled).
2. (Currently Amended) ~~A strain according to claim 1~~ The method of claim 23 wherein the gene encodes an enzyme, which is active early in the purine pathway.
3. (Currently Amended) ~~A strain according to claim 1~~ The method of claim 23 wherein the gene is one of the first six enzymes in the purine pathway.
4. (Currently Amended) ~~A strain according to claim 1~~ The method of claim 23 wherein the gene is *purF*.
5. (Currently Amended) ~~A strain according to claim 1~~ The method of claim 23 wherein said gene is inactivated by complete or partial deletion mutation or by insertional mutation.
6. (Currently Amended) ~~A strain according to claim 1 which~~ The method of claim 23 wherein the live strain is a strain of *Francisella tularensis*.
7. (Currently Amended) ~~A strain according to~~ The method of claim 6 ~~which~~ wherein the live strain is a strain of *Francisella tularensis* subspecies *tularensis*.
8. (Currently Amended) ~~A strain according to~~ The method of claim 6 ~~which~~ wherein the live strain is a strain of *Francisella tularensis* subspecies *novicida*.
9. (Previously Presented) A pharmaceutical composition comprising a live strain of *Francisella* species wherein a gene, which encodes an enzyme in the purine pathway,

has been inactivated, and which is able to produce a protective immune response in an animal, in combination with a pharmaceutically acceptable carrier.

10. (Currently Amended) ~~A~~ The composition ~~according to~~ of claim 9 wherein the gene encodes an enzyme, which is active early in the purine pathway.

11. (Currently Amended) ~~A~~ The composition of claim 9 wherein the gene is one of the first six enzymes in the purine pathway

12. (Currently Amended) ~~A~~ The composition of claim 9 wherein the gene is *purF*.

13. (Currently Amended) ~~A~~ The composition of claim 9 wherein said gene is inactivated by complete or partial deletion mutation or by insertional mutation.

14. (Currently Amended) ~~A-pharmaceutical~~ The composition of claim 9 wherein the strain is a strain of *Francisella tularensis*.

15. (Currently Amended) ~~A-pharmaceutical~~ The composition ~~according to~~ of claim 13 wherein the strain is a strain of *Francisella tularensis* subspecies *tularensis* or a strain of *Francisella tularensis* subspecies *novicida*.

16 -22. (Cancelled).

23. (Currently Amended) A method of preventing or treating infection by a *Francisella* species, ~~which~~ the method ~~comprises~~ comprising administering to an animal an effective amount of a live strain of *Francisella* species wherein a gene ~~which~~ that encodes an enzyme in the purine pathway has been inactivated, to produce a protective immune response in ~~an~~ the animal.

24. (Currently Amended) ~~A method according to~~ The method of claim 23 for preventing or treating infection by *Francisella tularensis*, wherein the strain of *Francisella* species used in the method is a strain of *Francisella tularensis* subspecies *tularensis* or *Francisella tularensis* subspecies *novicida*.

25. (Currently Amended) The ~~strain~~ method of claim 4 ~~23~~ wherein the gene is inactivated using cryotransformation.

26. (Currently Amended) ~~A strain of~~ The composition of claim 12, wherein the *Francisella tularensis* strain is subspecies *tularensis* ~~wherein a gene that encodes a *purF* gene~~ has been inactivated.